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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/601,597	06/24/2003	Young Ho Park	2336-181	1487

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EXAMINER

LEWIS, MONICA

ART UNIT PAPER NUMBER

2822

DATE MAILED: 05/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

EK

**Office Action Summary**

Application No.

10/601,597

Applicant(s)

PARK ET AL.

Examiner

Monica Lewis

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**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --****Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 March 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 5 and 18-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 5 and 18-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 June 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 4/05.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

1. This office action is in response to the amendment filed March 7, 2005.

#### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 5 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miura et al. (U.S. Patent No. 5,665,986) in view of Keizo et al. (Japanese Patent No. 2001-339100) and Ishida (U.S. Publication No. 2004/0209542).

In regards to claim 5, Miura et al. ("Miura") discloses the following:

- a) a first conductive GaN clad layer (5) with an upper surface provided with a first contact (6) formed thereon (For Example: See Figure 1);
- b) an active layer (4) formed on a lower surface of the first conductive GaN clad layer (For Example: See Figure 1);
- c) a second conductive GaN clad layer (3) formed on a lower surface of the active layer (For Example: See Figure 1);
- d) a conductive substrate (1) with a lower surface provided with a second contact (7) formed thereon (For Example: See Figure 1).

In regards to claim 5, Miura fails to disclose the following:

- a) a conductive adhesive layer.

However, Keizo et al. ("Keizo") discloses the use of a conductive adhesive layer (3) (For Example: See Figure 1). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Miura to include the use of a

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conductive adhesive layer as disclosed in Keizo because it aids in providing good optical effectiveness (For Example: See Paragraph 9).

Additionally, since Miura and Keizo are both from the same field of endeavor, the purpose disclosed by Keizo would have been recognized in the pertinent art of Miura.

b) the conductive adhesive layer is made of a material selected from the group consisting of Au-Sn, Sn, In, Au-Ag and Pb-Sn.

However, Ishida discloses the use of a conductive adhesive layer made of Pb-Sn (For Example: See Paragraph 38). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Miura to include the use of a conductive adhesive layer made of Pb-Sn as disclosed in Ishida because it aids in providing electrical connection (For Example: See Paragraph 40).

Additionally, since Miura and Ishida are both from the same field of endeavor, the purpose disclosed by Ishida would have been recognized in the pertinent art of Miura.

In regards to claim 22, Miura fails to disclose the following:

a) the conductive adhesive layer is made of a Pb-Sn alloy.

However, Ishida discloses the use of a conductive adhesive layer made of Pb-Sn (For Example: See Paragraph 38). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Miura to include the use of a conductive adhesive layer made of Pb-Sn as disclosed in Ishida because it aids in providing electrical connection (For Example: See Paragraph 40).

Additionally, since Miura and Ishida are both from the same field of endeavor, the purpose disclosed by Ishida would have been recognized in the pertinent art of Miura.

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4. Claims 18 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miura et al. (U.S. Patent No. 5,665,986) in view of Keizo et al. (Japanese Patent No. 2001-339100), Ishida (U.S. Publication No. 2004/0209542) and Akita et al (Japanese Publication No. 11-068157).

In regards to claim 18, Miura fails to disclose the following:

a) the conductive adhesive layer is made of an Au-Sn alloy.

However, Akita et al. ("Akita") discloses the use of an Au-Sn alloy layer (For Example: See Abstract). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Miura to include the use of a conductive adhesive layer made of Au-Sn as disclosed in Akita because it aids in providing higher efficiency devices (For Example: See Abstract).

Additionally, since Miura and Akita are both from the same field of endeavor, the purpose disclosed by Akita would have been recognized in the pertinent art of Miura.

In regards to claim 23, Miura fails to disclose the following:

a) the conductive adhesive layer is a reflective layer made of a material selected from the group consisting of Au-Sn, Sn, In, Au-Ag.

However, Akita discloses the use of an Au-Sn alloy layer (For Example: See Abstract). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Miura to include the use of a conductive adhesive layer made of Au-Sn as disclosed in Akita because it aids in providing higher efficiency devices (For Example: See Abstract).

Additionally, since Miura and Akita are both from the same field of endeavor, the purpose disclosed by Akita would have been recognized in the pertinent art of Miura.

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5. Claims 19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miura et al. (U.S. Patent No. 5,665,986) in view of Keizo et al. (Japanese Patent No. 2001-339100), Ishida (U.S. Publication No. 2004/0209542) and Olson (U.S. Patent No. 5,766,740).

In regards to claim 19, Miura fails to disclose the following:

a) the conductive adhesive layer is made of Sn.

However, Olson discloses the use of Sn as an adhesive (For Example: See Column 5 Lines 28-32). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Miura to include the use of a conductive adhesive layer made of Sn as disclosed in Olson because it aids in providing electrical dielectric strength (For Example: See Column 3 Lines 43 and 44).

Additionally, since Miura and Olson are both from the same field of endeavor, the purpose disclosed by Olson would have been recognized in the pertinent art of Miura.

In regards to claim 21, Miura fails to disclose the following:

a) the conductive adhesive layer is made of Au-Ag alloy.

However, Olson discloses the use of Au-Ag Alloy as an adhesive (For Example: See Column 5 Lines 28-32). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Miura to include the use of a conductive adhesive layer made of Au-Ag as disclosed in Olson because it aids in providing electrical dielectric strength (For Example: See Column 3 Lines 43 and 44).

Additionally, since Miura and Olson are both from the same field of endeavor, the purpose disclosed by Olson would have been recognized in the pertinent art of Miura.

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6. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Miura et al. (U.S. Patent No. 5,665,986) in view of Keizo et al. (Japanese Patent No. 2001-339100), Ishida (U.S. Publication No. 2004/0209542) and Cho et al (U.S. Patent No. 5,226,053).

In regards to claim 20, Miura fails to disclose the following:

a) the conductive adhesive layer is made of In.

However, Cho et al. ("Cho") discloses the use of In as an adhesive (For Example: See Column 7 Lines 5-8). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Miura to include the use of a conductive adhesive layer made of In as disclosed in Cho because it aids in providing a means of bonding components (For Example: See Column 7 Lines 5-8).

Additionally, since Miura and Cho are both from the same field of endeavor, the purpose disclosed by Cho would have been recognized in the pertinent art of Miura.

#### ***Response to Arguments***

7. Applicant's arguments filed 3/7/05 have been fully considered but they are not persuasive. First, Applicant argues that "the Examiner alleged that Ishida is from the same field of Applicant's endeavor. Applicant's respectfully disagree. The present invention relates to vertical GaN (i.e., inorganic) light emitting diodes, whereas Ishida relates to the field of organic light emitting diode (OLED) displays." However, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed.

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Cir. 1992). In this case, Ishida and Applicant inventions are related to light emitting devices. Therefore, the prior art is not nonanalogous.

Second, Applicant argued that "Ishida is not reasonably pertinent to the particular problem with which the inventor was concerned." However, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

Finally, Applicant argues that "the prior art references fail to provide any suggestion or motivation to combine the semiconductor of Miura Keizo and the conductive adhesive layer of Ishida to arrive at the invention of claim 5." However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Miura to include the use of a conductive adhesive layer as disclosed in Keizo because it aids in providing good optical effectiveness (For Example: See Paragraph 9). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor of Miura to include the use of an adhesive layer made of Pb-Sn as disclosed in Ishida because it aids in providing electrical connection (For Example: See Paragraph 40).

### ***Conclusion***

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after

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the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Monica Lewis whose telephone number is 571-272-1838. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amir Zarabian can be reached on 571-272-1852. The fax phone number for the organization where this application or proceeding is assigned is 703-308-7722 for regular and after final communications. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956

ML  
May 12, 2005



**Mary Wilczewski**  
**Primary Examiner**